

INFRASTRUCTURE PLANNING - THE TRANSPORTATION PLANNING PROCESS

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## Infrastructure Planning - The Transportation Planning Process

Few planning programs have as great an impact upon growth patterns than do those involving transportation systems. Transportation systems are essential to overcome distance and provide the freedom of access necessary to enjoy the many quality of life related opportunities distributed throughout metropolitan areas. Access to employment, commerce, housing, recreation, etc., are representative of those amenities of life that transportation systems must provide in both an effective and efficient manner.

Separate parts of transportation networks do not function independently of each other, rather they operate as a system where changes occurring in one area affect the system elsewhere. This relationship makes coordination imperative when creating, or changing, elements of transportation networks. It results in the development of plans for transportation networks designed to work as complete systems.

In recognition of the need to coordinate transportation planning programs, Congress passed legislation in 1962

requiring all urban areas to conduct "continuing, comprehensive and cooperative" transportation planning processes. This legislation required the creation of a "Metropolitan Planning Organization" (MPO) to coordinate the transportation planning process within each metropolitan area in the nation. The Charleston Area Transportation Study, (CHATS), is a direct result of this legislation and the CHATS Policy Committee serves as the MPO to direct the planning process.

CHATS is a continuing planning program that monitors and reviews the efficiency of the area's transportation system, and, provides for the planning of facilities and services needed to meet the future transportation needs of the Charleston urban and urbanizing area.

The current agreement governing the CHATS program is between the S.C. Department of Transportation, the BCDCOG, and the CHATS Policy Committee. The State Department of Transportation is a key implementing agency for CHATS and is responsible for monitoring the use of highway systems and for developing travel projections. The Department also provides analysis and forecasts of the availability of financial resources and cost estimates for transportation improvements in the study area. The COG is a regional planning agency which

is responsible for coordinating the local aspects of CHATS activities and staffing the various CHATS Committees. The COG is also responsible for providing and monitoring socioeconomic data and land use activities, and serves as the primary focal point for the storage and distribution of CHATS related information.

The CHATS Policy Committee is the forum for determining metropolitan transportation policies and priorities. It is composed principally of elected officials from the governments within the study area. The Policy Committee is responsible for the continuing review of the CHATS program and for insuring that the transportation plan is functionally sound, financially feasible, and in conformance with the goals and objectives of the state, region and local communities. The Policy Committee provides the direction and leadership necessary to implement the plan. The Policy Committee also annually updates a five year "Transportation Improvement Program", (TIP), providing a timing sequence to the allocation of funds necessary to implement projects included within the plan.

The most recent federal legislation governing transportation planning processes, and the use of federal dollars to implement those plans, was entitled The Intermodal

Surface Transportation Efficiency Act of 1991 (ISTEA). This legislation increased the authority of the CHATS Policy Committee to plan and program transportation improvements. It also provided the Policy Committee with greater discretion in the use of Federal transportation dollars.

To provide some direction for the development and preparation of plans, TIPS, and major investment studies, ISTEA identifies fifteen (15) explicit factors which must be considered throughout the transportation planning process. These factors address both transportation issues and the need for the process to encompass broader issues, such as consistency with land use planning and the effects of transportation investments on surrounding communities. The fifteen factors are:

1. The preservation of existing facilities;
2. Consistency of transportation plans with Federal, State and local energy conservation programs and policies;
3. The need to relieve congestion and to prevent congestion where it does not yet occur;
4. Consistency of transportation plans and programs with land use plans;
5. Where appropriate, the programming of funds for transportation enhancement activities;

6. The effect of transportation projects on the surrounding communities. Such consideration should include an analysis of the cost effectiveness of alternative investments to meet the demand for transportation services;

7. Access to other transportation facilities (such as air and sea ports, freight distribution routes), national parks and boarder crossings;

8. Connectivity of roads within metropolitan areas with roads outside of such areas;

9. Needs identified through ISTEA-required transportation management and monitoring systems;

10. The preservation of rights-of-way for future transportation improvements;

11. The enhancement of the efficient movement of freight;

12. The use of life-cycle costing for bridges, tunnels, and pavements;

13. The overall social, economic, energy, and environmental effects of transportation decisions and the need to work with the public and affected agencies (such as housing, community development, and environmental resource management agencies) to ensure that transportation plans are compatible with social and environmental goals;

14. The expansion of transit services, where appropriate;

and,

15. Improving security on transit systems.

The basic procedure followed to complete major transportation studies is a sequence of six steps. These are: data collection, forecasting, stating goals, preparing network proposals, testing, and evaluating. A brief description of each step follows:

1. Inventories: Plans must be based upon information concerning current conditions. Information about the existing highway system, traffic volumes, transit systems and ridership are basic information needs. Data pertaining to land use, population, housing, employment, labor force, school enrollment, vehicle registration and retail sales are also collected in support of CHATS. Socioeconomic data is presented for over 500 geographic subdivisions (called Traffic Analysis Zones) within the CHATS study area. Other types of information such as, traffic counts, parking surveys, etc., are collected in support of special studies sponsored within small areas.

2. Forecasts: Forecasts are developed to estimate what the metropolitan area will be like in the future. The same factors for which data is collected in the inventory phase of the planning process, are projected twenty years into the future.

These forecasts are made for the same Traffic Analysis Zones used in the inventory phase.

3. Goals: The ISTEA legislation identified fifteen factors which must be considered during the planning process. These factors have been incorporated by the CHATS Policy Committee into six General Goals, supported by thirty three policies, which give additional direction to the CHATS planning program. The goals are to:

A, Provide accessibility and mobility for people and goods by developing and maintaining an adequate, safe, and balanced transportation system;

B. Link land use and transportation planning;

C. Develop and implement a phased program of transportation improvements which continually upgrade all transportation modes while achieving an economical expenditure of public funds;

D. Preserve and make maximum use of the existing transportation facilities and resources of all modes by implementing low cost improvements, which enhance the efficiency of the transportation system as a whole, and encourages the conservation of energy;

E. Enhance the quality of life and minimize the adverse impact on the natural environment, integrate planning for



regional development, transportation and air quality;  
and,

F. Implement the Long Range Plan.

4. Preparing Network Proposals: Network proposals must provide for transit as well as highway facilities. Proposals must be for complete systems, not increments of one or two facilities, but complete systems serving the entire urban area at its expected size at the time of the planning target year. A number of network proposals are prepared for testing purposes.

5, Testing: The purpose of the testing phase in the planning process is to determine how well any given network proposal will work at the end of the planning period. Because of the great volumes of information needed to project future transportation needs, this phase of the planning process utilizes computer programs calibrated to reflect the characteristics of the CHATS study area.

6. Evaluation: The results of each test of a transportation network are evaluated in terms of the plan's goals and objectives. By comparing the results of different network evaluations it is possible to determine which types, configurations, and quantities of transportation facilities provide greater reductions in the costs of transportation in

return for additional investments in facilities, or programs. The Evaluation step in the planning process culminates in the presentation of a plan recommended for adoption.

The CHATS Policy Committee is responsible for adopting both the twenty year Area Transportation Plan, and an annual five year Transportation Improvement Program. At the discretion of the Chairman, The Policy Committee may seek information and opinions from the CHATS Staff, the CHATS Study Team and CHATS Citizens Advisory Committees. The Policy Committee is not bound by the recommendations of these committees. However, any such recommendation prepared by these committees must be reviewed and considered by the Policy Committee.

Bylaws for the CHATS Policy Committee also provide that the Staff must review and develop recommendations concerning any proposed changes to CHATS Plans and the Transportation Improvement Program prior to their consideration by the Policy Committee. This requirement ensures that changes can be evaluated on a system, or network, basis, are cost feasible, and, have been reviewed in reference to the fifteen planning factors as required by the ISTEA.

Policy Committee bylaws also provide for the appointment

of a Study Team composed of one technical staff member from every local government having planning, transportation or administrative staff, and, several other organizations with a direct interest in transportation systems. One of the primary activities of the Study Team is to help to evaluate plan proposals.

The priority of any project included within the CHATS Plan and Transportation Improvement Program is determined by the CHATS Policy Committee after receiving a recommendation from the Study Team. The Study Team utilizes a Project Evaluation system to ensure that ISTEA's required planning factors, as well as regional goals, are considered in the planning process. The Project Evaluation system provides for three categories of criteria which have different weighted values used in this process. The system may be summarized as follows:

Category A - Primary Criteria.

1. Preserve and modernize key elements of the existing system - It is important to look at preserving and modernizing the existing road system before new roads are built.

2. Mitigate congestion - Does this project do anything to mitigate or reduce the amount of congestion on the existing, or future, road system?

3. Improve safety and security - Does the project improve the safety of the current or future road system? Also, does the project improve the security of the system users (for example - evacuation routes)?

4. Improve mobility of people - How well does the project improve the way people can move around the CHATS area?

5. Improve mobility of freight - Does the project improve the movement of freight through the CHATS area and to connecting points to needed destinations outside the CHATS area?

#### Category B - Financial Efficiency Criteria.

1. Efficient use of financial resources - Is the project financially feasible and if so, is it the most efficient use of funding? Financial feasibility means that the cost of the project will fit into the five (5) year guideshare given by the SC Department of Transportation. Financial efficiency means " are there private funds that can be used to help build this project, e.g., contributions from a large developer, impact fees, etc.

Category C - Secondary Criteria.

1. Protect and Improve the Environment - Does the project take into account the environmental issues of the area in which the project is to be built, as well as, those of the region as a whole? Are there wetlands within the project area? Will the project add to overall air, noise and/or water pollution, etc.?

2. Support Planned Economic Activity - Does the project take into account economic activity in the project area and region? How will changing traffic patterns affect businesses in the project area and region? Will the project improve economic activity within a certain area, etc.?

3. Promote preferred overall social activity - Does the project take into account preferred social activity in the project area and the region as a whole, e.g. effects on land use, community disruption, energy costs, safety, congestion, etc.?

4. Support land use plans and goals - Does the project support the land use plans and goals of the community or communities encompassing and/or abutting the project and of the region as a whole?

5. Consistency with energy conservation programs - Is the project consistent with all Local, State, and Federal Conservation Programs.

6. Community support - Does the project have the support of the community or communities encompassing and/or abutting the project? Support can be shown by such items as governmental Resolutions, letters of support from community leaders, petitions, etc.

7. Provide or improve intermodal components or linkages - How well does the project integrate with and/or link with such items as freight movement, mass transit, airports, seaports, and linkages to transportation systems outside the CHATS area?

The Study Team members determine recommended project priorities by individually ranking projects which are then added together and averaged to provide a final score. Each Criteria is graded on a 0 to 10 point sliding scale. Those points assigned to criteria in Category A are multiplied by two (2) to attain a weighted value. Points assigned to Category B have a multiplier of 1.5, while criteria in Category C have a multiplier of 1.0.

It needs to be pointed out that once a highway project is included in the CHATS Transportation Plan and Transportation Improvement Program, much remains to be accomplished before construction can start on that project. The Department of Transportation utilizes the following "Simplified Project

Development Process" listing to keep Policy Committee members apprised of the status of CHATS projects:

1. Receive priority from Policy Committee. (determine need and scope of work);
2. Request Program Action and Notice for Eminent Domain;
3. Receive Project Authorization - Approval to spend funds on project.
  - a. Request Traffic Accident Information.
  - b. Request Traffic Projections plus Pavement Design and Traffic Turning Movements.
  - c. Conduct Field Review and Determine
    1. Typical Sections
    2. Design Speeds
    3. Hydrology
4. Request Surveys/Digital Mapping;
5. Develop Preliminary Plans;
6. Request Traffic Engineering Review of Preliminary Plans;
7. Develop Project Planning Report and Submit;
8. Initiate Environmental Section work;
9. Request P.S. & E. (Plans, Specifications & Estimates) Prints from Road Design;
10. Conduct P.S. & E.
  - a. Request Exception for any Substandard Design

- b. Request Hydrology and Bridge Studies as required
  - c. Request for Permit(s) Determination
- 11. Submit Environmental Document Approval (Preliminary)
- 12. Prepare Public Hearing Display(s)
- 13. Request Public Hearing
  - a. Advertised 45 days prior
- 14. Conduct Public Hearing
- 15. Prepare Location and Design Study Report
  - a. Request Location and Design Approval
- 16. Develop Advertisement "Have Requested", Location and Design Approval
- 17. Develop Advertisement Stating Location and Design Approval Received
- 18. Obtain Environmental Approval (Final)
- 19. Submit Necessary Environmental Permit(s) Applications
- 20. Conduct 2nd P.S. & E., if necessary
- 21. Review Plans (Right of Way and Construction
- 22. Receive Approved Environmental Permit(s)
- 23. Modify Plans as per Review and Stipulation of Approved Permit(s)
- 24. Have Right of Way Plans Signed
- 25. Acquire Right of Way
- 26. Review Plans (Construction)
- 27. Modify Plans as per Review
- 28. Have Construction Plans Signed



- 29. Develop Cost Estimate and Special Provisions
- 30. Receive Bids for Construction
- 31. Receive Commission Approval to Award Construction Contract
- 32. Award Project
- 33. Construct Project